**MEASURES OF CENTRAL TENDENCY AND RANGE**

* **M of CT**: mean, median, mode
* **Mean:** add all up and divide by # of numbers you have, it’s the MEAN one
* **Median:** middle number (put #s in order first), think MEDIAN of a road or MED is like MID in middle, or MEDIUM size is the middle size
* **Mode:** # that occurs the most often, think MOST often or MORE, if there is only one of every number then there is no mode
* **Range:** difference between highest and lowest numbers, think of a MOUNTAIN RANGE b/c it has high and low points that you go between

**CROSS
SECTIONAL
CUTS**

* When you cut a 3d shape in to sections
* **Play-dough!**
* Perpendicular: cut up and down. Will INTERSECT with table
* Parallel: cut sideways. Does not touch table

**SURFACE AREA
(answers = squared)**

* **Cube**: 6s2 or 6lw
* **Rect. Prism**:
2(lw+lh+wh) or
2lw+2lh+2wh
* **Triangular Prism**:
2B+Perimeter of base \*height
* **Cylinder**:
 $2πr^{2}+2πrh$ or $2πr^{2}+πdh$

**VOLUME
(answers = cubed)**

* **Cube**: s3 or lwh
* **Rect. Prism**: lwh
* **Triangular Prism**:
½lwh
* **Cylinder**: $πr^{2}h$

**ORDER OF OPERATIONS**

**Please:** Parentheses
**Excuse:** Exponents
**My:** Multiplication
**Dear:** Division
**Aunt:** Addition
**Sally:** Subtraction

* Treat multiplication and division as equals
* Treat addition and subtraction as equals
* Work left to right if you’ve got signs that are treated equally (Ex. If you got – before + do – first… L🡪R)

**MEASUREMENT (answers never cubed)**

* **Area of square**:
s2 or lw
* **Area of rectangle**:
lw
* **Area of triangle**:
½bh
* **Area of circle**:
πr2
* **Perimeter:**add all sides up
* **Circumference:**2πr or πd

**SCALE FACTOR**

* Used with maps, blue prints, etc
* Shrinks or enlarges objects
* PROPORTIONAL to original
* Ex. ½ inch = 3 ft where room’s measurements on blueprint are 3 ½ inches by 4 inches… use a proportion to solve
 **S.F. Room**
**inches** .5 = 3.5\_
**feet** 3 x
 **S.F Room**
**inches** .5 = 3\_
**feet** 3 x
\*\* Room is 21 feet by 18 feet

**RATIOS, FRACTIONS, & DECIMALS**

* **Ratio:** a way to represent a fraction using :
* **Fraction:** part over whole
* **Decimal:** another way to represent a fraction. Top # ÷ bottom # = decimal
* Example of ¾:
	+ Ratio**-**  **3:4**
	+ Fraction- **¾**
	+ Decimal- 3 ÷ 4 = **0.75**
* **Decimal to Fraction:** take the number after the decimal and put it over the place value (Ex. 0.625 🡪 $^{625}/\_{1000}$ because the 5 is in the thousandths place… now simplify… simplifies to 5/8)
* **Bar notation:** line that shows a # repeats

**PERCENTS**

If you have all the percents (whole) it will be **100%**.

* **Decimal to %:** decimal \* 100 (move deci. 2 to 🡪)
* **% to Decimal:** % ÷ by 100 (move deci. 2 to 🡨)
* **Fraction to %:** top # ÷ bottom # \*100
* **% to Fraction:** turn % to decimal then decimal to fraction (see ratio fraction decimal box)
* **Tax as a %:** figure out how much tax is by using the proportion below, to get final/total price take that answer and add to price of item/bill
 x = tax percent\_
price of bill/item 100
* **% of increase/decrease finding tax %:** find the amount of change by taking the original price (starting price) and subtracting it from the price that it becomes/ends as
amount of change = x\_\_
 original price 100
* **Commission:** commission made = %\_\_
 amount sold 100

**BOX PLOTS (5 parts… read L🡪R)**

* **Lower extreme:** lowest number
* **Lower quartile:** median of lower ½ #s
* **Median:** middle number
* **Upper quartile:** median of upper ½ #s
* **Upper extreme:** highest number
* 25% of data is between LE and LQ, 25% is between LQ and Median, 25% is between Median and UQ, and 25% is between UQ and UE… 100% total
* Interquartile range (IQR) = UQ – LQ… 50% of data
* Finding an **outlier**- # way out there compared to other #s
1. IQR \* 1.5
2. Take answer and subtract from LQ
3. Take #1’s answer and add to UQ
4. Any # lower than your #2 answer or greater than your #3 answer is an outlier
* Outliers influence mean and range a lot

**SOLVING TWO STEP EQUATIONS**

* Do the opposite to reverse the operation and work backwards with order of operations to get x by itself and what you do to one side you have to do to the other
* Example: -2x + 3 = 15
 -3 -3
 -2x = 12
 -2 -2
 x = -6
* If using inequalities (<, >, <, >), if you **multiply** or **divide** by a **negative** # then the sign changes direction.

**TEST TIPS**

* Get plenty of rest the night before
* Eat a good breakfast the morning of the test
* RELAX!!
* As soon as you’re allowed to start, quickly write down helpful formulas and notes on your scrap paper so you don’t forget during the test
* Use process of elimination
* You can write in your test book so WRITE ALL OVER IT. Cross out wrong answers, highlight/underline/circle important words.
* Circle your correct answer in the test book so if you get off on your bubble sheet you can easily go back and fix things
* **BELIEVE IN YOURSELF!!**

**ANGLES**

* **Acute:** less than 90 degrees
* **Obtuse:** greater than 90 degrees
* **Right:** 90 degrees
* **Straight:** 180 degrees
* **Complementary:** 2 angles that add up to 90 degrees
* **Supplementary:** 2 angles that add up to 180 degrees

* Lines A and B are parallel and T is the transversal
* **Alternate interior:** 3 and 6, 4 and 5
* **Alternate exterior:** 1 and 8, 2 and 7
* **Vertical:**1 and 4, 2 and 3, 5 and 8, 6 and 7
* **Corresponding:** 1 and 5, 2 and 6, 3 and 7, 4 and 8
* **Degrees in a shape:**
	+ Triangles: 180 degrees
	+ Quadrilaterals (squares, parallelograms, rectangles, trapezoids, rhombus, etc):
	360 degrees
	+ Circle: 360 degrees

 1 2
A
 3 4

B 5 6
 7 8

 T

**SIGNS**

When multiplying and dividing signs or if you see two signs side by side use the rules below:

**- -** becomes **positive**
**+ +** stays **positive**
**- +** becomes **negative**
**+ -** becomes **negative**

**WORDS TO KNOW**

* **Variable:** a letter that’s holding the place of a number
* **Substitution:** when you plug a number into an equation where a variable is
* **Linear:** a straight line (nonlinear = not straight)

**OTHER STUFF**

* **Distributive Property** in algebra:
3(x-4) = -18
3\*x + 3\*-4 = -18
 3x + -12 = -18
 3x-12 = -18
 +12 +12
 3x = -6
 3 3
 x = -2
* **Coordinates on a grid:** (x,y) x comes first when saying a point just like it comes before y in the alphabet
 

**GRAPHS**

* **Line Graph:** shows change over time (Ex. show change in temperature over time)
* **Histograms:** a type of bar graph that uses intervals. The intervals must be the same and a number can’t be in more than 1 set (Ex. All the following have 4 numbers in the interval: 1-4, 5-8, 9-12, and so on and the number 8 is only in one interval set)
* **Circle:** used to compare parts to a whole. 360 degrees in a circle. To figure out a central angle use the proportion:
 # of degrees = #/% of area
 360 degrees total # in all

**STEM AND LEAF GRAPH**



Key 2|4 = 24

* The grey is the stem (tens place in this case) and the leaves are on the outside (ones place)
* Numbers should be in order from least to greatest with the smaller numbers being closest to the stem
* Numbers on left: 22,22,22,27,35,47,49
* Numbers on right: 21,24, 25,25,26,31,32,32,37,45